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Patrick W. Bixenman

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EXAMINER

GAY, JENNIFER HAWKINS

ART UNIT

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PATRICK W. BIXENMAN, MARK FRAKER,
EMMANUEL RIOUFOL, PAUL EBNER, and DAVID GARRETT

Appeal 2009-000481
Application 10/710,833
Technology Center 3600

Decided:¹ June 17, 2009

Before WILLIAM F. PATE, III, LINDA E. HORNER, and
STEFAN STAICOVICI, *Administrative Patent Judges*.

HORNER, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

STATEMENT OF THE CASE

Patrick W. Bixenman et al. (Appellants) seek our review under 35 U.S.C. § 134 of the Examiner's decision rejecting claims 1-16 and 25-32. Claims 17-24 are withdrawn from consideration and thus are not before us on appeal. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

SUMMARY OF DECISION

We AFFIRM.

THE INVENTION

Appellants' claimed invention is a device and method for providing a cable in a conduit, where the cable forms a generally uniform helix along substantially the entire length of the conduit so that the cable is uniformly supported. Spec. para. [0002], [0007], [0022]. Claim 1, reproduced below, is representative of the subject matter on appeal.

1. A conduit for suspension in a wellbore,
comprising:

a length of conduit; and

a cable inserted into the conduit, the cable having buckles, each buckle adapted to contact an interior surface of the conduit at a plurality of locations across substantially the entire length of conduit to prevent longitudinal movement of the cable within the conduit, wherein the cable is uniformly supported along the length of the conduit.

THE EVIDENCE

The Examiner relies upon the following as evidence of unpatentability:

Denison	US 4,095,865	Jun. 20, 1978
McHugh	US 5,954,136	Sep. 21, 1999
Moore	US 6,148,925	Nov. 21, 2000

THE REJECTIONS

Appellants seek our review of the following rejections:

1. The Examiner rejected claims 1, 2, 4, 5, 8, 9, 14, and 25-32 under 35 U.S.C. § 102(b) as anticipated by Moore.
2. The Examiner rejected claim 3 under 35 U.S.C. § 103(a) as unpatentable over Moore and Denison.
3. The Examiner rejected claims 6, 7, 10, 12, 13, 15, and 16 under 35 U.S.C. § 103(a) as unpatentable over Moore and McHugh.
4. The Examiner rejected claim 11 under 35 U.S.C. § 103(a) as unpatentable over Moore, McHugh, and Denison.

ISSUE

The Examiner found that Moore anticipates claims 1, 2, 4, 5, 8, 9, 14, and 25-32, and that the subject matter of claims 3, 6, 7, 10-13, 15, and 16 would have been obvious over Moore in combination with either McHugh, Denison, or McHugh and Denison. Ans. 3-6. Appellants argue that Moore fails to disclose uniform buckling or uniform support for the cable. App. Br. 6-9; Reply Br. 6-8.

The issue presented by this appeal is:

Have Appellants shown the Examiner erred in finding that Moore discloses uniform buckling and uniform support for the cable?

FINDINGS OF FACT

We find that the following enumerated facts are supported by at least a preponderance of the evidence. *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427 (Fed. Cir. 1988) (explaining the general evidentiary standard for proceedings before the Office).

1. Appellants' Specification describes a variety of methods of inserting a cable into a conduit that is longer in length than the conduit, so that the cable "buckles" into a helical or arcuate shape, putting the cable in substantially a compressed state. Spec. paras. [0022] to [0023]. The compressive force of the cable is transferred as a frictional force to the conduit so that downward longitudinal movement of the cable within the conduit is prevented, i.e., the cable is self-suspending. Spec. para. [0026].
2. Appellants' Specification describes that "buckle" means the longitudinal alignment of the cable in the conduit changes under compression, and goes from being coaxial with the conduit to being a sinusoid, spiral, helix, or other arcuate shape so that the cable contacts the interior surface of the conduit at a plurality of spaced longitudinal locations. Spec. para. [0026]. In contrast, "buckling" is not "the cable being damaged either by free suspension or excessive compressive forces." Spec. para. [0027]. Further, "buckling" is "a purposeful, designed arrangement" that includes consideration of: the size of the inside diameter of the

conduit, the diameter of the cable, and the internal strength of the cable, so that “the cable will purposefully form the desired sinusoidal, spiral, helical, or other arcuate shape and make the plurality of uniform points of contact with the interior surface of the conduit with sufficient compressive frictional forces to prevent downward longitudinal movement of the cable within the conduit.” Spec. paras. [0027] and [0028]; *see also* Spec. para. [0025] (listing consideration factors for amount of cable to produce the desired buckling).

3. Appellants’ Specification does not provide a definition of “uniformly supported” with regard to the support for the cable, as used in the claims. Spec., *passim*.
4. Appellants’ Specification consistently describes that it is the uniform shape of the cable that provides uniform support for the cable. *See e.g.* Spec. para. [0007] and paras. [0022]-[0024].
5. The Specification describes the “uniform” shape of the cable, as:

[A]ny arcuate path will suffice as long as it spans substantially the entire length of the conduit. While a uniform helical or arcuate shape may be ideal, generally, the cable may form an arcuate path, which may include a reverse-spiral section and/or a section defining a tighter spiral than another section. For example, an embodiment may include a cable defining an arcuate path within a conduit where the cable is deployed in a tighter spiral pattern at the bottom of the conduit [than] at the top of the conduit. The key is that the cable defines any arcuate path through substantially the entire length of the conduit to increase surface contact (and thus friction) within the conduit.

Spec. para. [0037].

6. Moore discloses a method of manufacture of a wire line system that involves inserting a length of conductor into an elongated length of coiled metal tubing after the tubing has been formed. Moore, col. 1, ll. 5-9, 62-64.
7. Moore's method begins as tubing 34 is inserted into a well bore (substantially vertical passageway). Moore, Fig. 5; col. 4, l. 66 to col. 5, l. 1.
8. Then, the leading end of the conductor 36 and an attached weight are inserted into the upper end of the tubing, and the weight and conductor 36 fall by gravity through the tube 34. Moore, col. 3, ll. 36-38; col. 5, ll. 1-3.
9. During insertion of conductor 36 into tubing 34, two interrelated factors must be controlled to maintain acceptable tension in conductor 36. First, the weight attached to the leading end of the conductor 36 must be heavy enough "for pulling the conductor straight and providing sufficient weight for the gravitational forces to cause the conductor to fall to the bottom of the tubing." Moore, col. 5, ll. 4-9. However, the attached weight must not be so heavy that it completely overcomes the frictional force between the outer surface of the conductor 36 and the inner surface of the tubing 34 that is supporting the weight of the conductor. Moore, col. 4, ll. 14-17. Second, as the weight and conductor 36 fall through the tubing 34, the pitch of the tubing 34 is adjusted, by straightening or relaxing tubing 34, which adjusts the tension in conductor 36 by altering the frictional force between conductor 36 and tubing 34. Moore, col. 7, ll. 40-47. In other words, selection of the attached weight and adjustment of the pitch of tube 34 balances the force on

the conductor so that there is sufficient frictional force between conductor 36 and tube 34 to sufficiently support the weight of the conductor and keep the tensile force acceptable, while the frictional force is not so great as to prevent conductor 36 and the attached weight from moving through tube 34.

10. After the weight and conductor 36 are completely inserted into tubing 34, the wire-in-a-tube is complete and may be removed from the well and wound onto a reel. Moore, col. 10, ll. 1-4
11. Moore discloses that when the wire-in-a-tube is in use, conductor 36 maintains a helical shape (due to inherent memory) which supports conductor 36 inside the tube 34 through frictional interface between the outer surface of the conductor 36 and the inner surface of tubing 34 sufficient to support the weight of conductor 36. Moore, col. 3, l. 65 to col. 4, l. 8.

PRINCIPLES OF LAW

“Both anticipation under § 102 and obviousness under § 103 are two-step inquiries. The first step in both analyses is a proper construction of the claims. . . . The second step in the analyses requires a comparison of the properly construed claim to the prior art.” *Medichem, S.A. v. Rolabo, S.L.*, 353 F.3d 928, 933 (Fed. Cir. 2003) (internal citations omitted).

We determine the scope of the claims in patent applications not solely on the basis of the claim language, but upon giving claims “their broadest reasonable interpretation consistent with the specification” and “in light of the specification as it would be interpreted by one of ordinary skill in the art.” *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004).

Appellants have the burden on appeal to the Board to demonstrate error in the Examiner's position. *See In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) ("On appeal to the Board, an applicant can overcome a rejection [under § 103] by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness.") (quoting *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998)).

ANALYSIS

Rejection of claims 1, 2, 4, 5, 8, 9, 14, and 25-32 under 35 U.S.C. § 102(b) as anticipated by Moore

Appellants argue claims 1, 2, 4, 5, 8, 9, 14, and 25-32 as a group. App. Br. 6-9. We select claim 1 as the representative claim, and claims 2, 4, 5, 8, 9, 14, and 25-32 stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(vii) (2008).²

² Appellants mention claims 14, 25, 27, and 32 in their arguments against the anticipation rejection. App. Br. 9. These claims are not presented under a subheading identifying each claim by number. App. Br. 6-9. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2008) ("Any claim argued separately should be placed under a subheading identifying the claim by number"). More importantly, Appellants' statements regarding these claims consist of nothing more than recitations of what each claim states, and bald assertions, unsupported by specific arguments, that the claimed limitations are not disclosed by the prior art. The Appellants' statements as to claims 14, 25, 27, and 32 do not persuade us of error in the Examiner's decision to reject those claims. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2008) ("A statement which merely points out what a claim recites will not be considered an argument for separate patentability of the claim.").

Claim Construction

Claim 1 recites that the cable has buckles that contact the interior surface of the conduit at “a plurality of locations across substantially the entire length of conduit to prevent longitudinal movement of the cable within the conduit.” The Specification defines “buckle” and “buckling” as longitudinal alignment of the conductor in the conduit in a “sinusoid, spiral, helix, or other arcuate shape” so that the cable contacts the conduit at a “plurality of uniform points of contact with the interior surface of the conduit with sufficient compressive frictional forces to prevent downward longitudinal movement of the cable within the conduit.” (Fact 2).

Claim 1 also recites that “the cable is uniformly supported along the length of the conduit.” Appellants’ Specification does not define “uniformly supported” for the cable (Fact 3), but consistently refers to the “uniform” shape of the cable within the conduit as providing “uniform” support to the cable (Fact 4). Further evidence that the shape of the cable and the support provided to the cable are interrelated is that the Specification discloses that the “key” to the shape of the cable is “that the cable defines any arcuate path through substantially the entire length of the conduit to increase surface contact (and thus friction) within the conduit” (Fact 5). The Specification provides that any arcuate shape is uniform “as long as it spans substantially the entire length of the conduit.” (Fact 5). Thus, a person having ordinary skill in the art, upon reading Appellants’ Specification, would understand that a cable is “uniformly supported along the length of the conduit” provided the cable has any arcuate shape that spans substantially the entire length of the conduit.

Giving claim 1 the broadest reasonable interpretation consistent with the Specification, a person of ordinary skill in the art would understand the

claim to require a length of conduit with a cable inserted therein, the cable being any arcuate shape and contacting the conduit at a plurality of locations through substantially the entire length of the conduit with sufficient force to prevent longitudinal movement of the cable within the conduit. Using this claim construction, we now compare claim 1 to the reference.

Moore

It is important to distinguish Moore's method of manufacture from Moore's disclosure of the use of the final device. Moore discloses a method of manufacture of a wire line system which involves inserting a length of conductor into an elongated length of coiled metal tubing after the tubing has been formed using a gravity feed method (Facts 6-9). Moore discloses that the completed wire-in-a-tube is then wound onto a reel for subsequent use (Fact 10). Moore discloses that this method produces a device that comprises an arcuate-shaped (helical) conductor (cable) inserted in tubing (conduit) so that the conductor contacts the tubing with sufficient force to prevent downward longitudinal movement of the conductor within the tubing in use (Fact 11).

Appellants argue that Moore discloses a cable within tubing that "does not produce a uniform buckling along the length of the assembly," but rather results in an assembly with the bottom of the cable "heavily buckled," the mid-portion possibly in tension with no buckle at all, and the upper portion in tension. App. Br. 6. Appellants admit, by their own description of Moore in paragraph 5 of the Spec and in the Appeal Brief at page 6, that Moore discloses a length of conduit with a cable inserted therein and that the cable of Moore "buckles."³ Appellants are attempting to distinguish the prior art

³ See Appellants' description of buckling at Fact 2.

based on the shape of the cable within the conduit of Moore being less consistent (i.e., uniform) than that claimed, but such a distinction is not claimed. Appellants could have claimed the shape of the cable in more definitive or precise terms, such as by specifying a number of coils per unit length; however, this is not the case. Appellants chose to claim the cable in such a way that what is required is any arcuate shape inserted in a length of conduit so that the cable contacts the conduit at a plurality of locations through substantially the entire length of the conduit with sufficient force to prevent longitudinal movement of the cable within the conduit. Moore meets this limitation by disclosing a helical cable that contacts the conduit at a plurality of locations through substantially the entire length of the conduit with sufficient frictional engagement between the cable and the conduit to support the weight of the conductor and to prevent the cable from dropping to the bottom of the conduit when in use (Fact 11).

Appellants also argue that Moore does not teach uniform support because the portion of Moore cited by the Examiner (column 3, line 62 to column 4, line 54) “does not indicate that the conductor or cable was placed in the tubing prior to being inserted into the wellbore.” App. Br. 7; Reply Br. 7. Here the method of manufacture and the use of the device should again be distinguished.⁴ Moore’s device is assembled in a well bore and then removed (Fact 10). The final product, when needed, is then inserted into a well bore for use (Fact 11). Because of this, the portion of Moore cited by the Examiner refers to use of the end product of Moore, which

⁴ Perhaps the confusion is caused by Moore’s reference to the use of the final product before disclosure of the method of making that product (see use of final product at column 3, l. 65 to column 4, line 8 and method of making that product beginning at column 4, l. 62).

contrary to Appellants' assertion, does have the conductor/cable already inserted (Fact 11). Appellants' contention does not get to the issue at hand. Whether the cable was inserted before the conduit is inserted into the well bore or after is not the critical question. The question is whether Moore discloses the claimed conduit, and we have determined that it does.

Appellants also argue that Moore discloses that the inherent helical shape of the conductor (cable) must be overcome or the conductor cannot properly fall by gravity through the coiled tubing. Reply Br. 6. Here again, Appellants' argument goes to the method of manufacture and not the use of the final device. Moore discloses overcoming the helical shape of the cable when inserting the cable in the conduit, through use of a weight and by adjusting the pitch of the conduit (Fact 9). However, Moore discloses that once the cable is inserted into the conduit and the wire line is complete and removed from the well bore, the cable retains a helical shape that frictionally engages the inside wall of the tube with sufficient force to prevent the cable from dropping to the bottom of the conduit (Facts 10-11).

Appellants have failed to demonstrate error in the Examiner's decision to reject claim 1, and claims 2, 4, 5, 8, 9, 14, and 25-32 fall with claim 1.

Rejection of claim 3 under 35 U.S.C. § 103(a) as unpatentable over Moore and Denison

The Examiner found that Moore discloses all the elements of claim 3 except the conduit being jointed tubing. Ans. 5. The Examiner found that Denison discloses jointed tubing for a well bore. Ans. 5. The Examiner concluded it would have been obvious to modify the conduit of Moore to be jointed tubing as taught by Denison in order to "have been able to use the

conduit as a drill string or for the other purposes for which coiled tubing is not optimal.” Ans. 5.

Appellants argue that claim 3 depends from claim 1 and is patentable over the Moore reference for the reasons argued with respect to the rejection of claim 1. App. Br. 10; Reply Br. 9. These arguments are unconvincing for the reasons explained in the analysis of claim 1, *supra*.

Appellants also argue that Denison does not disclose the uniform support recited by the claim. App. Br. 10. This individual attack fails to demonstrate error because the Examiner found that Moore teaches uniform support. *See In re Keller*, 642 F.2d 413, 426 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references).

Appellants also argue that Denison does not cure the deficiencies of the Moore reference. App. Br. 10. This argument is irrelevant because in the analysis of claim 1, *supra*, we found no deficiency in the Moore reference that must be cured.

Rejection of claims 6, 7, 10, 12, 13, 15, and 16 under 35 U.S.C. § 103(a) as unpatentable over Moore and McHugh

Appellants argue claims 6, 7, 10, 12, 13, 15, and 16 as a group. App. Br. 10-11. As such, we select claim 10 as the representative claim, and claims 6, 7, 12, 13, 15, and 16 stand or fall with claim 10. 37 C.F.R. § 41.37(c)(1)(vii) (2008).

The Examiner found that Moore discloses all the elements of claim 10 except for operatively connecting one end of the conduit to an electric

submersible pumping system.⁵ Ans. 5-6. The Examiner found that McHugh discloses using the conduit to suspend and power an electrical submersible pumping system within a well bore. Ans. 6. The Examiner concluded that it would have been obvious to use the conduit of Moore to suspend and power an electric submersible pump as taught by McHugh in order to have used a power conduit where the electrical power cable was not subject to the stress of the weight of the pumping system. Ans. 6.

Appellants repeat the arguments of claim 1, and also argue that the references fail to teach positioning a cable within a conduit such that the cable contacts the interior surface of the conduit at a plurality of locations to provide uniform support along the length of the conduit, as recited in claim 10. App. Br. 10-11.

The arguments made for claim 1 remain unconvincing for the reasons explained in the analysis of claim 1, *supra*. Similarly, the portion of claim 10 argued by Appellants requires the same “uniform support” analyzed in the rejection of claim 1, *supra*. Appellants have failed to demonstrate error in the Examiner’s decision to reject claim 10. Claims 6, 7, 12, 13, 15, and 16 fall with claim 10.

Rejection of claim 11 under 35 U.S.C. § 103(a) as unpatentable over Moore, McHugh, and Denison

The Examiner found that Moore discloses all the elements of claim 11 except for operatively connecting one end of the conduit to an electric submersible pumping system, and the conduit being jointed tubing. Ans. 6. The Examiner found that McHugh discloses using the conduit to suspend

⁵ The rejection states the pump is “submergible” but in this context, this is a typographical error and the Examiner meant “submersible.” Ans. 6.

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and power an electrical submersible pumping system within a well bore.

Ans. 6. The Examiner found that Denison discloses jointed tubing for a well bore. Ans. 6. The Examiner concluded it would have been obvious to use the conduit of Moore to suspend and power an electric submersible pump as taught by McHugh in order to have used a power conduit where the electrical power cable was not subject to the stress of the weight of the pumping system. Ans. 6. The Examiner concluded it would have been obvious to further modify the combined device of Moore and McHugh to use jointed tubing as taught by Denison to replace the conduit of Moore in order to “have been able to use the conduit as a drill string or for the other purposes for which coiled tubing is not optional.” Ans. 5.

Appellants repeat the argument used in support of claim 10 that the references fail to teach uniform support for the cable. This argument fails to demonstrate error by the Examiner in the rejection of claim 11 for the reasons explained in the rejection of claim 10, *supra*.

CONCLUSION

Appellants have failed to show the Examiner erred in finding that Moore discloses uniform buckling and uniform support for the cable.

DECISION

We affirm the Examiner's rejection of claims 1-16 and 25-32. No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED

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